## ABSTRACT

### OPTICAL DISPERSION COMPENSATION

The present invention provides a method of dispersion compensation comprising the steps of:

receiving an optical signal having a number of channels separated by wavelength; and applying dispersion compensation over at least one predetermined wavelength band independently of wavelengths outside the wavelength band,

wherein the wavelength band spans a plurality of channels numbering less than the total number of channels in the signal.

The present invention allows dispersion compensation to be applied to a group of channels within a wavelength band with the use of a dispersion compensation element optimised for the particular wavelength band in terms of dispersion compensation and attenuation. Two or more wavelength bands may be chosen to collectively span a WDM signal. Accordingly, the dispersion compensation characteristics of a number dispersion compensation elements may be collocated to create a favourable dispersion compensation characteristic extending over the bandwidth of WDM signal, without the need to treat each channel individually. A mid-span single device permits 40 channels at 10 $Gbits^{-1}$ over two bands over a distance of at least 6000km. The simple configuration allows for rapid implementation.